



September 2020 STEM Labor Demand Analysis

Across Missouri and the United States, there is high demand for a labor force educated and skilled in science, technology, engineering, and mathematics (STEM) disciplines. Missouri Economic Research and Information Center (MERIC) utilizes the Standard Occupational Classification Policy Committee's (SOCPC) definition of STEM to identify which jobs to classify as STEM occupations. All references to STEM occupations in this report, unless labeled as "STEM-Related" occupations, are what SOCPC calls "core" STEM occupations.

Occupational employment estimates for 2019 from the Bureau of Labor Statistics show there are over 9.6 million STEM jobs, representing 6.4 percent of U.S. employment. Forty-seven percent of STEM jobs are in mathematical and computer occupations. Architecture and engineering occupations make up another 26 percent of STEM occupations. *Software Developers & Software Quality Assurance Analysts & Testers* employed over 1.4 million people across the country in 2019. *Computer User Support Specialists* and *Computer System Analysts* each account for over 500,000 jobs. The largest STEM occupation not in the computer and mathematical occupation groups is *Civil Engineer* with 310,850 workers.

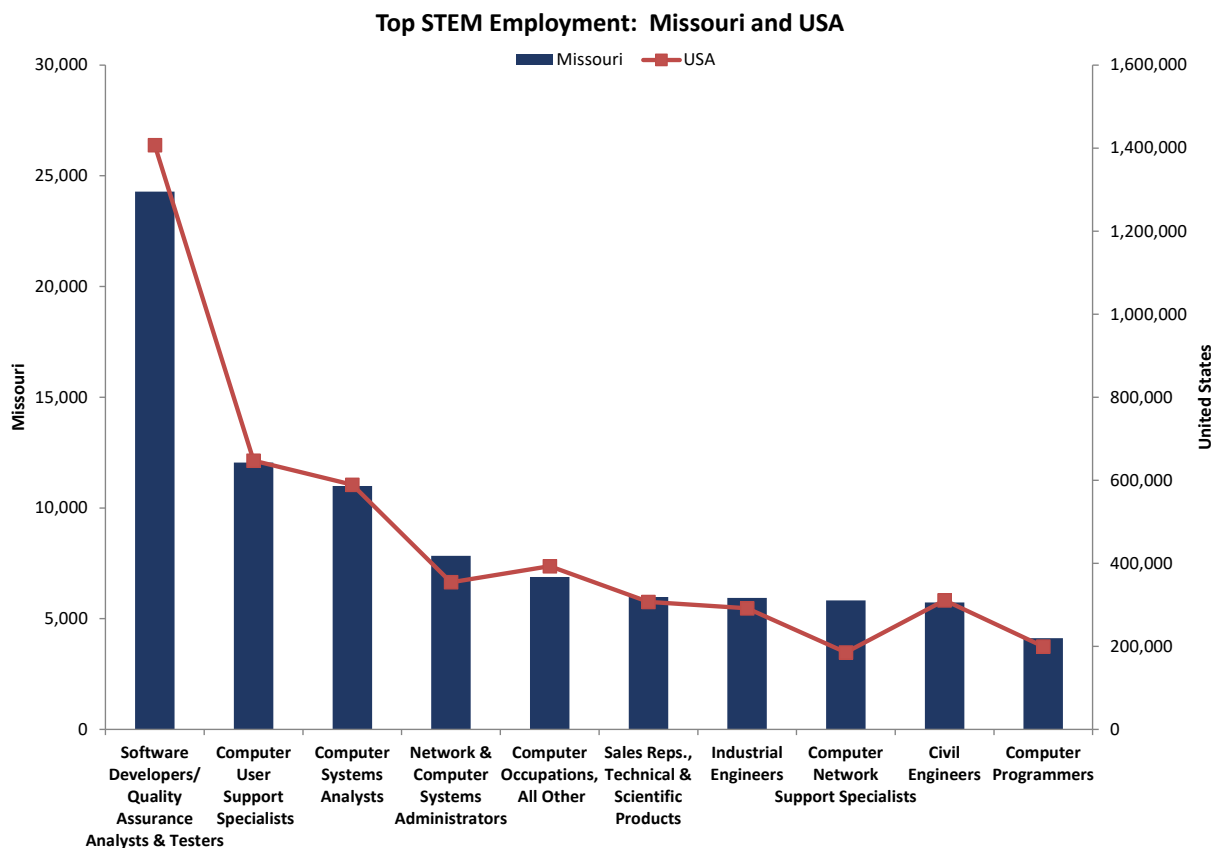
STEM occupations are high-paying occupations, with most having average wages considerably higher than the U.S. average of \$53,490. The highest paid STEM occupation is *Petroleum Engineer* (\$156,780), followed by *Computer and Information Systems Manager* (\$156,390) and *Architectural and Engineering Manager* (\$152,930). Only seven STEM occupations pay less than the national average for all occupations, all of which are technicians or assistants such as agricultural and food science technicians and social science research assistants.

STEM in Missouri

In Missouri, 5.9 percent of the workforce are employed in STEM occupations. The Workforce Development Areas (WDA) with the highest percentages of employment in STEM occupations are St. Louis (7.4%) and Kansas City (7.2%). West Central had the lowest percentage of STEM employment at 1.8 percent. Over half (53%) of STEM jobs were in mathematical and computer occupations. *Software Developers & Software Quality Assurance Analysts & Testers* is the STEM occupation with the largest employment, employing more than 24,000 people in 2019. *Computer User Support Specialists* and *Computer Systems Analysts* each employ more than 10,000 people. The largest STEM occupation not in the computer and mathematical occupation group is *Sales Representatives, Technical and Scientific Products* with 5,980 workers.

Like the rest of the nation, STEM occupations in Missouri are high-paying occupations, most having average wages considerably higher than the state average of \$47,820. The highest paid STEM occupation is *Physicist* (\$143,060), followed by *Architectural and Engineering Managers*

(\$140,000) and *Computer and Information Systems Manager* (\$132,180). Only seven STEM occupations pay less than the state average for all occupations, all of which are technicians, drafters, or foresters. The chart below shows the current top 10 STEM occupations in Missouri in order of number employed compared to the number employed in the nation.



Location Quotients (LQ) describe the concentration of an occupation or industry in a geographic region, in relation to the nation, with 1.0 being the national average. Location quotients (LQ) higher than 1.0 indicate a high concentration, while LQs lower than 1.0 indicate lower concentrations. The most concentrated STEM occupation in Missouri is *Forester* (LQ 2.28), a relatively small occupation with an estimated 420 employees across the state. Missouri also has high concentrations, or location quotients, in larger STEM occupations containing 1,000 or more employees such as *Life, Physical, and Social Science Technicians, All Other* (LQ 1.98), *Computer Network Support Specialist* (LQ 1.64), and *Social Science Research Assistant* (LQ 1.46). Long-term employment projections in Missouri show that the top five STEM occupations with the highest projected annual openings from 2018-2028 are *Applications Software Developer* (1,710), *Computer User Support Specialist* (1,353), *Computer Systems Analyst* (1,200), *Computer Occupations, All Other* (657), and *Sales Representatives, Technical and Scientific Products* (653).

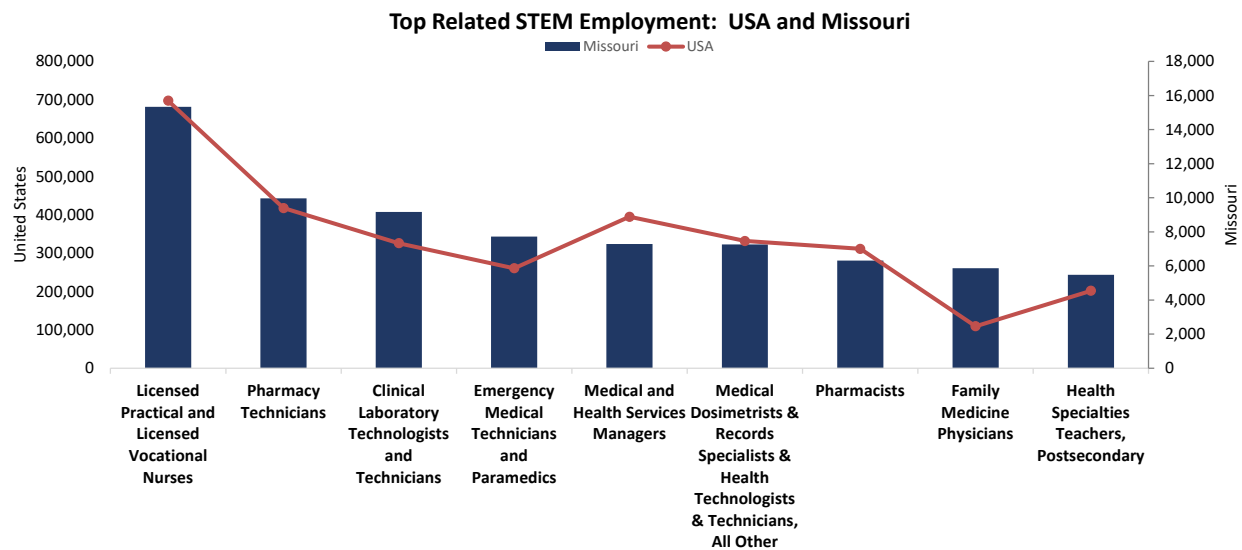
From Aug. 1, 2019 - July 31, 2020, there were more than 87,000 online job ads for STEM occupations, making up 14 percent of total job postings. The top five employers with the most STEM job ads were The Boeing Company, Wells Fargo, IBM, Deloitte, and Washington University. The Workforce Development Area with the most job postings in core STEM occupations was St. Louis, which is also the WDA with the largest population of STEM workers. Over the last year, there were more than 56,000 STEM job ads posted in the St. Louis WDA. The St. Louis WDA also had the highest percentage of STEM job postings at 18 percent, followed by Kansas City (11%) and Central (8%). *Computer Occupations, All Other* was a top STEM job across all Missouri WDAs. *Computer Occupations, All Other* is also projected to grow 11.52 percent from 2018-2028.

Central 8% of Job Postings Software Developers, Applications Computer Occupations, All Other Computer User Support Specialists Network & Computer Systems Admin. Operations Research Analysts	Kansas City 11% of Job Postings Computer Occupations, All Other Software Developers, Applications Computer User Support Specialists Computer Systems Analysts Information Security Analysts	Northeast 6% of Job Postings Agricultural & Food Science Techs. Software Developers, Applications Computer Occupations, All Other Computer User Support Specialists Engineering Technicians, All Other
Northwest 5% of Job Postings Engineering Technicians, All Other Computer User Support Specialists Software Developers, Applications Agricultural & Food Science Techs. Engineers, All Other	Ozark 7% of Job Postings Computer Occupations, All Other Software Developers, Applications Computer User Support Specialists Computer Systems Analysts Web Developers	South Central 4% of Job Postings Computer Occupations, All Other Engineering Technicians, All Other Engineers, All Other Computer User Support Specialists Software Developers, Applications
Southeast 6% of Job Postings Computer Occupations, All Other Computer User Support Specialists Clinical & School Psychologists Software Developers, Applications Engineering Technicians, All Other	Southwest 7% of Job Postings Computer User Support Specialists Engineers, All Other Computer Occupations, All Other Software Developers, Applications Engineering Technicians, All Other	St. Louis 18% of Job Postings Software Developers, Applications Computer Occupations, All Other Computer Systems Analysts Computer User Support Specialists Information Security Analysts
West Central 6% of Job Postings Clinical & School Psychologists Computer Occupations, All Other Computer User Support Specialists Agricultural & Food Science Techs. Engineers, All Other		

Source: Online Job Ads Aug. 01, 2019 - Jul. 31, 2020, Burning Glass Technologies
*Percentage of STEM job ads out of all job ads within Workforce Development Area.

STEM-related Occupations in Missouri

The Standard Occupational Classification Policy Committee also defines selected occupations as “related” STEM occupations. Occupational employment estimates for 2019 show 7.2 percent of the workforce is employed in STEM-related occupations. The region with the highest percentage of their workforce in STEM-related occupations is South Central at 7.9 percent, followed by Ozark and Southeast, both at 7.6 percent. The STEM-related occupation with the highest number employed in the U.S. and in Missouri is *Registered Nurse* (nearly 3 million in the country and 68,840 in Missouri). The chart below shows a comparison between other top STEM-related occupations in Missouri in order of number employed compared to the number employed in the nation.



According to the Bureau of Labor Statistics, the most concentrated STEM-related occupation in Missouri is *Family Medicine Physicians*, with a location quotient (LQ) of 2.8 and an estimated 5,870 employees across the state. Other large STEM-related occupations containing more than 1,000 employees with high location quotients are *Emergency Medical Technicians & Paramedics* (LQ 1.54) and *Clinical Laboratory Technologists & Technicians* (LQ 1.46).

Long-term employment projections in Missouri show that the top five STEM-related occupations with the highest projected annual openings from 2018-2028 are *Registered Nurses* (5,525), *Licensed Practical Nurses* (1,363), *Pharmacy Technicians* (918), *Medical and Health Services Managers* (762), and *Clinical Laboratory Technologist & Technicians* (756).

From Aug. 1, 2019 - July 31, 2020, there were more than 89,000 online job ads for STEM-related occupations, making up 14 percent of total job postings. The top five employers with the most STEM related job postings were BJC HealthCare, Mercy Health, SSM Health, St. Luke's Health System, and Hospital Corporation of America.

The WDA with the highest number of job postings in STEM-related occupations was St. Louis, with more than 40,000 online job postings over the past year. However, the South Central region had the highest percentage of STEM-related openings at 28 percent, followed by West Central (23%) and Northwest (22%). The top STEM-related job in every region was *Registered Nurses*, which is also projected to have higher than average growth, adding more than 12,000 jobs from 2018-2028 for a growth rate of 16.2 percent.

Central 17% of Job Postings Registered Nurses Licensed Practical & Vocational Nurses Medical and Health Services Managers Physicians and Surgeons, All Other Health Technologists/Technicians, All Other	Kansas City 13% of Job Postings Registered Nurses Medical and Health Services Managers Licensed Practical & Vocational Nurses Health Technologists/Technicians, All Other Physicians and Surgeons, All Other	Northeast 16% of Job Postings Registered Nurses Licensed Practical & Vocational Nurses Medical and Health Services Managers Physicians and Surgeons, All Other Physical Therapists
Northwest (NW) 22% of Jobs Registered Nurses Medical and Health Services Managers Licensed Practical & Vocational Nurses Physicians and Surgeons, All Other Speech-Language Pathologists	Ozark 13% of Job Postings Registered Nurses Medical and Health Services Managers Licensed Practical & Vocational Nurses Health Technologists/Technicians, All Other Physicians and Surgeons, All Other	South Central 28% of Job Postings Registered Nurses Physicians and Surgeons, All Other Licensed Practical & Vocational Nurses Medical and Health Services Managers Speech-Language Pathologists
Southeast 17% of Job Postings Registered Nurses Licensed Practical & Vocational Nurses Medical and Health Services Managers Physicians and Surgeons, All Other Physical Therapists	Southwest 19% of Job Postings Registered Nurses Medical and Health Services Managers Licensed Practical & Vocational Nurses Health Technologists/Technicians, All Other Radiologic Technologists	St. Louis 13% of Job Postings Registered Nurses Medical and Health Services Managers Licensed Practical & Vocational Nurses Physicians and Surgeons, All Other Health Technologists/Technicians, All Other
West Central 23% of Job Postings Registered Nurses Licensed Practical & Vocational Nurses Health Technologists/Technicians, All Other Medical and Health Services Managers Physicians and Surgeons, All Other		

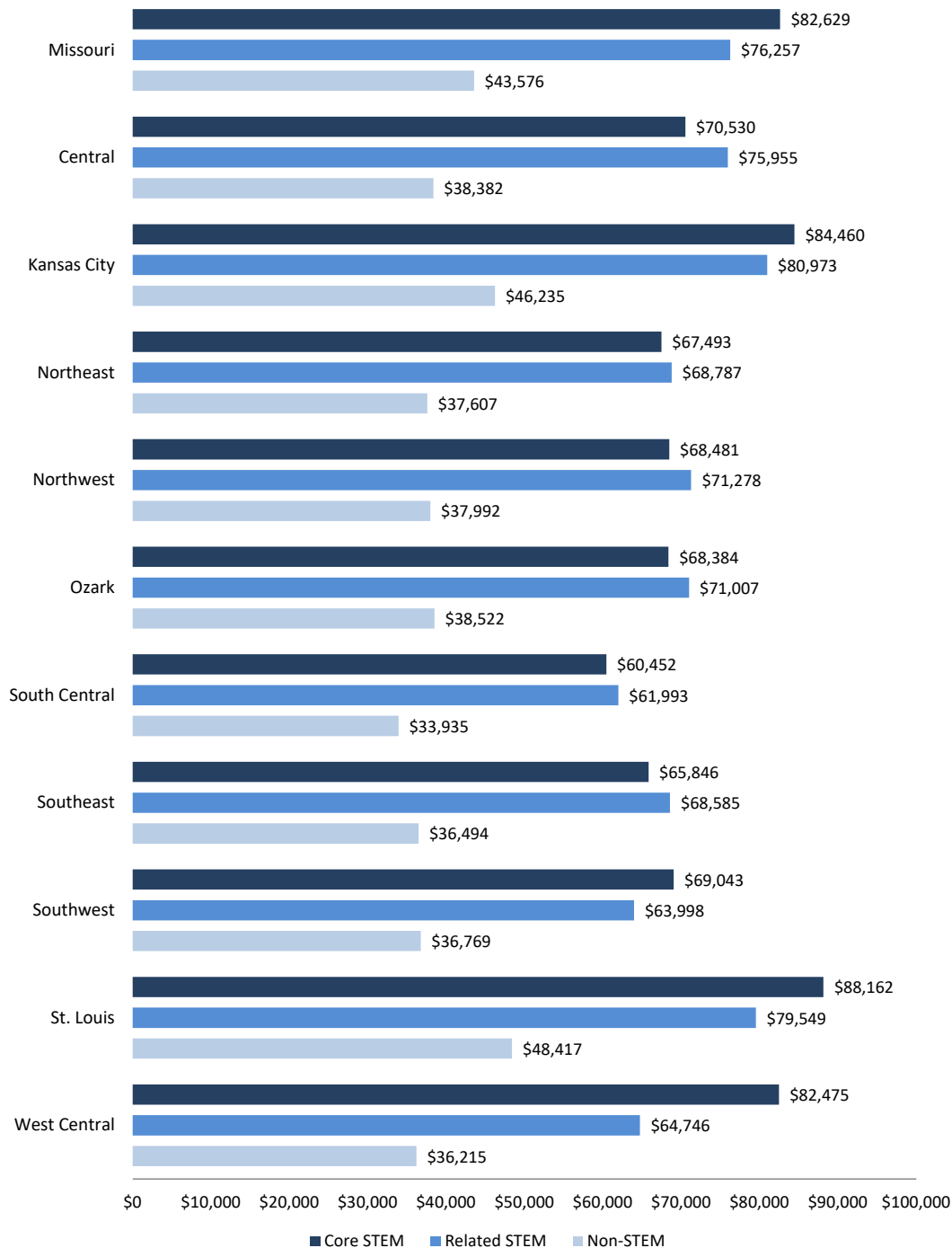
Source: Online Job Ads Aug. 01, 2019 - Jul. 31, 2020, Burning Glass Technologies

*Percentage of STEM job ads out of all job ads within Workforce Development Area.

Wage Data: STEM, STEM-Related and Non-STEM

According to the U.S. Bureau of Labor Occupational Employment Statistics, the average wage for Core STEM jobs in Missouri is \$82,629 annually, nearly \$40,000 higher than the average wage for non-STEM jobs. STEM-related jobs have an average annual wage of \$76,257, over \$30,000 more than non-STEM jobs.

2019 Average Wage: *STEM, Related STEM & Non-STEM*



The top paying core STEM occupation across the state is *Physicist* with an average annual wage of \$143,060, followed by *Architectural and Engineering Manager* (\$140,000), and *Computer and Information Systems Manager* (\$132,180). The top earning STEM-related occupation is *Anesthesiologist* (\$263,990), followed by *Psychiatrist* (\$241,640) and *General Internal Medicine Physician* (\$216,350). The top paying non-physician STEM-related occupation is *Nurse Anesthetist* with an average annual wage of \$161,420.

Both core and STEM-related occupations provide good wages, and most have high projected growth. Employees have opportunities to be creative, innovative, and on the cutting edge of new technology. Demand is high, and there are many positions in these STEM occupations waiting to be filled.

Data Sources: 2019 Occupational Employment and Wages, Bureau of Labor Statistics, MERIC 2018-2028 Employment Projections, Burning Glass/Labor Insight

Notes: The Standard Occupational Classification Policy Committee (SOCPC) is a group of representatives from nine federal agencies. The SOCPC organized at the request of the Office of Management and Budget to create guidelines for the classification of STEM workers

Burning Glass Technologies, Labor/Insight tool: Data for this analysis has been extracted using Burning Glass Technologies, Labor/Insight™ tool that collects information from over 35,000 web sources, including job boards, newspapers, large and small employer websites. Missouri Economic Research and Information Center (MERIC) uses this data to compile and publish reports for the State and Labor Market Regions. While this analysis presents a broad picture of hiring activity and serves as a measure of labor demand, it does not capture openings that are filled through other networks.

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